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ABSTRACT

The task of teaching writing to students in business, engineering, design, computer science, accounting, and other professional areas raises the question of what knowledge the writers call upon to create a rhetorically effective writing plan. Research suggests three plausible answers: their knowledge of schemata, the structure of their topic knowledge, and the constructive process of rhetorical problem solving. The knowledge that has the most visible effect on student performance is rhetorical problem solving. Designing rhetorically sophisticated courses in professional writing, then, requires that English instructors (1) recognize the different kinds of knowledge writers need, (2) teach for the significant tasks, and (3) teach from their special strength--rhetorical problem solving. Writers rise to rhetorical problem solving during at least three occasions: in exploring the rhetorical problem (especially at the outset), in creating a plan, and in reviewing and testing both plans and texts. The methods of exploration professional writers use are adapted to the task at hand or to a given discourse. In addition, they themselves may vary in the methods they use to explore a complex problem. The path from plan to text is a series of rhetorical decisions in which the writer's plan and purpose are instantiated in the choice of a top-level discourse topic which is in its turn elaborated by a series of related sentence topics. Testing the text simply means simulating the reader's comprehension process. To prepare for writing beyond the classroom, students need to work on realistic tasks, learn rhetorical strategies, and develop a meta-awareness of their own strategic processes. (HOD)

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Rhetorical Problem Solving: Cognition and Professional Writing

Linda Flower

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RHETORICAL PROBLEM-SOLVING: COGNITION AND PROFESSIONAL WRITING

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1. What Does a Professional Need to Know?

When my father went to college in Chicago the1930's business writing was taught as the art of writing elegant and persuasive sales letters. But as he and modern surveys observe, much of that work is now carried on over the phone. The sales letter, like the five-paragraph theme in freshman composition, looks a bit antique and seems to have lost its claim to be the archetypal business writing task, the task we assume will "transfer" to all others. The field of business seems too large to reduce to a single genre. Even the ubiquitous "memo" is more a format than a rhetorical genre. And compared to the old-time sales letter, which required the mastery of popular psychology, rhetorical moves, and vivid style, the memo is an impoverished genre at that. But if these standard genres are an inadequate basis for a course of instruction, what then should we teach to developing business and professional writers? What is the knowledge most worth having?

What Should We Teach--and Can We Do So?

The question, "What should a business and professional writing course teach?" is often raised quite suddenly for English teachers who may have spent little time thinking about this subject in graduate school. A dean or department head suddenly realizes that "We need to offer a business writing course, and you are the best person to design it." Even ten years ago this task might have been easier, if one was happy with the standard style and format approach to business writing. But the writing across the curriculum movement has further expanded our vision of what writing outside the English class involves and of the way writing is stubbornly embedded in a rhetorical situation and a larger discourse community. Our clientele in business writing courses represents (future) professionals and business people for whom writing is a way to succeed at their work. It seems a little short sighted to require an engineer to master the "complaint letter answer" (a task one sees in many textbooks) or to ask the future accountant to perfect a process description of a gear train assembly. The task of teaching professionals (in business, engineering, design, computer science, accounting and so on) raises a fundamental question: <u>Can we teach the knowledge that these writers really need?</u>

A look at the current debate on this question suggests that there are at least four rival answers:

1. One familiar answer is that we can't and, indeed, shouldn't try. English classes should return to teaching the canon or should at least stay with personal and/or academic writing and leave professional writing to the disciplines and on-the-job learning where it belongs. For different reasons, this position is also held in professional writing circles by people who are acutely aware of the job-specific know-how and interpersonal savvy that often make business communications work. Learning to communicate in business, they observe, comes from learning the ropes--and that knowledge isn't found in classes or books.
2. A second answer asumes more optomistically that we can do something useful, but because writing well is ultimately a matter of talent or experience, all we can really <u>teach</u> are the forms and conventions of discourse. Hence, we find courses which are the analogues of traditional freshman English, focused on grammar, style, and forms, e.g., the literary and personal essay is replaced with the memo, the process description, and the claim letter.
3. A third, more ambitious answer claims that we <u>can</u> teach the knowledge worth having, but , in the spirit of the writing-across-the curriculum movement, it must be highly discipline-specific. Students must learn to think and write in the idiom of their discipline--or at least must learn to handle the discourse conventions of their field (for good discussions of this issue see: Bazerman 1983; Bizzell 1982; Maimon 1979; Walvrood 1982) . There have been some exemplary programs under the writing-across-the-curriculum banner, and many schools have a tradition of a few, upper-level team-taught courses that combine disciplinary

projects and writing. On a larger scale, this approach is sometimes difficult for people trained in English to do with confidence,and there is some tendency to end up teaching formulas--to concentrate on the formats of the discipline rather than its underlying intellectual maneuvers.

4. A fourth answer asserts that some of the knowledge most worth having rests within our own discipline and that we can teach rhetorical knowledge and principles of rhetorical problem-solving that transfer across different writing tasks. This approach acknowledges the importance of discourse conventions but concentrates on broader rhetorical strategies for analyzing the audience, planning, revising, and managing one's time and writing process.

This is obviously not a new debate. The positions are familiar from the debate on freshman composition, which Richard Young described in "Arts, Crafts, Gifts and Knacks" (1980). According to Young, the "current-traditional paradigm" in writing instruction (reflected in answers 1 and 2 here) is an outgrowth of neo-romantic assumptions that writing is a talent, a gift that can not be taught. Since that assumption might leave a great many English teachers unemployed, the current traditional paradigm did not throw in the towel altogether, but sensiblly shifted its attention to what it felt could be taught--mechanics and style. In essence, freshman composition as an institution found a way to hold on to its neo-romantic assumptions, but avoid the consequences of answer #1 and still keep teaching.

Answers 3 and 4 are trying to play a different game. To take those positions you must assume there is a coherent intellectual base to composition teaching--something beyond knack, talent, and experience. Writing instruction can teach the "art" of writing in the classical sense of an art because it is based on a substantive body of knowledge about rhetorical principles and strategies, about underlying discourse conventions (beyond format), and about one's own writing process. Rhetorical and discourse knowledge is typically harder to learn than mechanics, format and style; it stretches the mind just as physics, economics, and programming do.

The debate separating answers 3 and 4 is whether this knowledge needs to be taught in a discipline-specific context in order to be useful. Clearly you must learn to "think like a physicist" in order to do physics (learning formulas will only get you through an exam). But is "writing like a physicist" a special art (assuming you can think like one to get your work done)? Or can future bankers, graphic designers, and administrators be taught more general rhetorical strategies which they adapt to new situations after college and to the specific conventions and typical strategies of their discourse community? In other words, how general can our "art" be and still be practical?

These are difficult questions to answer. Yet, it is hard to design a coherent course without taking some sort of stand, since these different answers dictate important decisions: how you spend teaching time (focusing on practice or actively teaching strategies and conventions); what model texts you use (selecting examples of format or exemplars of rhetorical problems); and what criteria you judge by (requiring the mastery of correctness, of a plain style, of conventions, or of rhetorical effectiveness).

Although my personal bias clearly rests with answers 3 and 4, we must, indeed, value each of these different sorts of knowledge, whether it is business savvy, imagination, or rhetorical awareness. To educate is to make a decision about the knowledge students need most. And that suggests that we might do well to look at the writers themselves.

The Knowledge Behind Performance

The debate in English studies has focused on what to teach and how to design courses. In cognitive psychology and in the educational research community a debate closely parallel to this one is being conducted in terms of knowledge and performance. Modern cognitive psychology has tended to focus its attention on the nature of knowledge itself and the process of using it--what do experts know; what do novices in an area typically know and need to learn; how is the knowledge of both groups organized; what knowledge and/ or processes seem best to account for

differences in performance? A cognitive perspective might frame the question in this way: "What knowledge does a writer call upon to create a rhetorically effective writing plan--to write like an expert in his or her profession?" The research we will look at suggests three plausible answers:

1. Experts rely on their knowlege of schemas.
2. Experts rely on the structure of their topic knowledge
3. Experts rely on the constructive process of rhetorical problem-solving.

How Do Writers Construct "Expert" Writing Plans?

The first answer to our question is the one implicitly supplied by any traditional business writing text: "Expert writers can draw on ready-made plans supplied by genre, conventions, or schemas for the text they are writing". Current research on how people use genre knowledge to comprehend stories helps explain how this process might work. For example, children learn elementary story grammars by the time they are three or four years old. They use this knowledge (which predicts that anything called a "story" will have an actor, an action, a goal, conflict and resolution, etc. to produce their own "grammatical" if bizarre stories. If you have a mental schema about what to expect at a birthday party (Rumelhart 1975) or a script for eating at a restaurant(Schank & Ableson 1977), your recall of the event will not only be richer and faster, it will be more accurate (as long, that is, as the event conforms to your schema). As this research shows, knowlege of conventions and schemas has generative power; it allows people to reconstruct information that should be there (even if it wasn't). Having such slots waiting to be filled will be an obvious advantage to the writer. For example, Schumacher, Klare and Scott's studies of professional journalists writing obituaries (a schema in which journalism students are drilled) found that planning time for these genre experts was reduced to short bursts of apparently local, what-to-say-next planning (1985). The bottom line, we were told, is that no matter how famous you become, a good journalist will be able to write your obit for the New York Times in twenty minutes flat.

The power of genre knowelge is impressive. The military has come to rely heavily on this approach to planning in developing what are called Fully Proceduralized Instructions. This genre calls for the writer to specify every object and every step that occurs in the performance of some technical task. Likewise, traditional technical writing instruction has often viewed itself as teaching formulas and conventions.

However, this research leaves us with an important question. If the task is to produce a significant piece of writing, how much of the planner's work is done by these skeletons provided by conventions? If the task is the writing of Fully Proceduralized Instructions, a child's narrative, or even a news story (who, what, when, where,why), these conventions appear to do a great deal of the work for the writer. But for many adult texts, with their more complex goals and greater information load, these skeletal plans offer the writer only an abstract frame and limited information about the contents of an optimal plan. Discourse conventions and schemas are a valuable but limited guide when the writer must construct an expert plan.

A second answer to our question,"how do writers construct expert plans?" is that they draw on extensive topic knowledge. Topic knowledge carries very important information about how to conceive, categorize, and talk about a topic. For example, one landmark study on the role of topic knowledge asked people with high topic knowledge and people with low topic knowledge about baseball to read and recall an account of a particular game (Spilich et al. 1979). People with low knowledge didn't know what details to attend to (e.g., they remembered players' names but not the key plays), and they didn't recognize the implications of major events (e.g., certain hits are important because they advance base runners). The baseball cognoscenti, on the other hand, could select what details to remember and would then reconstruct an entire play by drawing inferences from those salient facts.

This study suggests that writers with high topic knowlege might have some of the following advantages in developing a writing plan: First, they could select the important information from the "noise." They could then keep this relevant information in short-term memory (or focal attention) while they observed, read, or thought about the topic. Finally, they could relate observed actions to the goal behind those actions (e.g., they would be able to infer why something happened). These advantages, it appears, affect not only the focus and organization of ideas on paper, but the processes of thinking and writing as well.

There is however, another side to this picture. Topic knowledge can offer a ready-made plan for organizing discourse, but what if that plan does not fit the assignment well? Langer (1984) found that high school history students whose knowledge of a topic had a loose, associative structure did well on "write about" assignments. But on exam questions or assignments that asked them to apply their knowlege, this associative structure was a handicap compared to the hierarchically organized knowledge other students were shown to possess. Students with the loose , associative body of ideas either did poorly on these assignments or simply ignored them and produced a "write about" essay anyway. Note that in the Langer study the structure one already possessed dictated the structure of the text--even when it was inappropriate. Clearly the next step in writing like an expert is learning to restructure one's knolwege when the task calls for such cognitive effort.

Business and professional writing is full of situations in which topic knowlege is simply not enough to produce good writing. For example, subject matter experts in technical fields are notoriously poor at explaining their knowledge to novices. High tech companies often entrust their instructional writing to people who know the equipment only to find they can't write about it.

Why does topic knowledge fail? One reason may be that these writers are unwilling or unable to simulate the response of a reader other than themselves. In one study, Bond asked lawyers to revise an impenetrable piece of federal regulation prose so it could be understood by lay readers (Bond, Hayes & Flower 1980) (As one lawyer said of this piece, "The sentences are long enough to choke a horse."). However, some of the lawyer readers simply could not detect any problems with the text--even when we politely asked them to try again. They could not or would not imagine the interpretive process and response of their readers.

Another reason topic knowledge may fail to produce a good plan is that the structure of the writer's knowlege may not approximate the structure of reader's knowledge, or that structure which the reader needs (Cf. Langer 1980). Kern et al. (1980) disgnosed this misfit as one of the major problems with writing for the military. The manuals they studied offered the trainee topic-based information, such as a description of the various parts of a tank and a discussion of the nature of combustion. The trainee, however, needed a performance-based discussion organized around the actions he was expected to perform. The performance-based revision of the tank passage, for instance, told the gunner and the driver what each needed to do (locating all the relevant information for each reader in a single spot instead of letting it trickle out as the text explored the tank). And the quasi-technical passge on combustion was replaced with a graphically arresting statement that came to the real point of the passage: "Don't put oily rags in cans."

The manuals Kern et. al surveyed were not necessarily poorly written in a formal sense; they were poorly designed for readers. The writers' topic knowlege of the technology was not enough to produce a good writing plan. My own work with business writers may help explain the source of the problem. The reports supervisors often complain about and the drafts written by my business students were often organized as narratives focused on the discovery process of the writer or as a descriptive memory dump of what the writer knew or observed (Flower 1979). I labeled this strategy as "writer-based" prose for two reasons. One was that it was not organized around what the reader needed which was usually a concise analysis organized around a problem , an issue, or a decision the reader needed to make. However, this writer-based prose was not an accident. It reflected the organization of knowlege in the writer's

thinking or memory and it represented a very efficient way for the writer to retrieve information. A writer-based recitation of topic knowledge can serve the writer well, as long as it is a strategy for invention, not a plan for the text. When topic knowlege isn't an adequate blueprint for a reader-based text, (and this seems to be the case more often than not) expert writers must turn to our third source of expert plans--the construction of a plan.

When topic and genre knowledge aren't adequate, writers rise to rhetorical problem solving: it is a more expensive, effortful cognitive process, but it is also more powerful and flexible. In turning to constructive planning writers generate a network of goals--they explore the problem before them; they develop goals and sub-goals; they notice constraints or conflicts in their tentative plan, and they replan and rethink their goals as they work on the problem.

If writers in general, then, draw on these three kinds of knowledge, what does the task of writing in the business professions require? What knowledge, if we could teach it, would have the most visible effect on our students' performance?

Rising to the Occasion: The Role of Rhetorical Problem Solving

Some writing tasks can be handled by either topic knowledge or knowledge of conventions and schemas. Those tasks may even account for fifty per cent of the writing a person does--after all, practice and experience should confer some benefits . However, in my experience both as a consultant and as a professional who writes, there are at least two situations that this knowledge doesn't handle. One is the process of learning to do a new task. I now have a schema for writing letters of recommendation that does at least some of the work for me. I know some conventions for establishing credibility and objectivity; I have a set of goals I normally try to accomplish, such as tying my comments to the strengths I know the candidate is trying to argue for too. But my first such letter, not to mention the second and third, forced me to turn in some anxiety to first principles, to worry over what should be in such a letter, infer the rhetorical moves behind the examples I had seen, and to test my plan and prose by trying to role-play a reader. Learners often have to build from the ground up when they meet a new task. Since we can not hope to teach our students the conventions for the enormous variety of minor genres they will meet, they need to have some first principles to build upon when they encounter new tasks.

A second situation that requires rhetorical problem solving is the task that may only come once a week or once a year, but is the significant piece of writing which has to *work* (not just sit in a file to confirm a phone call) and by which the writer is often judged. These significant writing tasks fall to new trainees and old hands alike. It is this writing that causes writers the most difficulty (and anxiety) , and it is this writing that the managers as audience are most likely to read, to care about, and to complain about. Under these circumstances the quality of one's business writing makes a difference. To make it clear that these instances of significant writing are not mere special cases, here are some typical examples from my experience in which the writing task called for rhetorical problem solving:

a. For many bank trainees, even those with MBAs, a typical entry-level position is in the credit department where the trainee's main job is to write a credit analysis. The trainee sifts through a mound of information and, then, unsure of what to select or eager to show the evidence of industrious homework, writes a 12-page descriptive essay on the prospective client. The credit managers (who also evaluate this new trainee) are regularly annoyed by this: in order to carry out their job, they want a 3-page analysis--focused on the relevant information--that can support a decision. The managers read this analysis in order to act, but the writers often fail to respond to this rhetorical situation.

b. The company I was working with had just reorganized its departments into independent profit centers, so all of the managers had to write budget justifications and projections for the year to come. The company accountants who had to compile this information couldn't get the managers to comply; it was starting to look like a silent standoff. In a seminar on writing in the

company, which included both the accountants and a number of the managers, we happened to look at the memo which had requested all this information from the managers, as an example of current writing. It became suddenly clear that the accountants had ignored their readers, many of whom simply did not know how to do such a projection, didn't know what records to keep, and didn't know what information the accountants really needed. And they weren't going to ask. For the company accountants to solve their own financial planning problem (i.e., getting information), they had to design their memo so that the readers could solve their own problem of how to respond. The original memo was accurate and conventionally appropriate, but a rhetorical failure for at least a third of the readers in that room.

c. In college, graphic designers develop both creative and technical abilities. They learn to solve design problems for commercial clients who want a distinctive product image or for subway systems that need signs which work. But the surprise for many new designers, with their trained "eye" for what works, is that their clients don't always have such an "eye," and the designer must depend on words to propose a plan that will win a contract, or to justify an innovative design. Writing can be a necessary professional skill which supports and interprets a visual design. Unfortunately, technical skill as a designer is not adequate preparation for the verbal, rhetorical task of showing a client how this design solves his practical problems.

d. Engineers I met in a major Research & Development Center spent most of their time in the lab or at the computer, and their techincal reports reflected this. They wrote conventional technical reports of the sort published in journals, concise and technically detailed. As the manager said, the writers were most happy when they could plot three results on the same graph, though this tended to make the graph unreadable to outsiders. The problem: this R.&D. Center had to earn its way.. It was evaluated by the extent to which engineers in the field found these reports useful and adopted the lab's recommendations. And most of these concise, conventional, but unreadable reports were gathering dust out in field office shelves around the country. To make matters worse, although this manager was critical of his staff, he was also rather unwilling to share his sense of what the field offices needed with the engineers--that knowledge was a part of his power as the liason. So to succeed in that office and escape his red pen, writers had to figure out a great deal about these reports for themselves.

e. In a sense the rhetorical problem in the previous example turns up with any technical report. The reports I write with my colleagues as a result of a research grant may have a distribution list of 100 people--some of those people are also doing writing research (and are easy folks write to), some are interested in the problem but from a variety of backgrounds--English, psychology, linguistics-- or for different reasons--teaching, modeling cognitive processes, designing computer aided instruction programs; and some readers, connected with the National Science Foundation, for instance, come with even broader and harder to predict concerns. Yet writing effectively for multiple audiences is a basic problem many professionals who write face everyday. In this situation, neither topic knowledge nor schemas are adequate without rhetorical problem solving.

f. Fifteen years ago, most computer documentation was written for a small circle of experts who had the know-how and willingness to learn a new system through experimenting with it. Programmers didn't have to be writers. But as first-time users have started to flood the market, the computer industry is finding that the quality of its documentation can have a big impact on sales. Good writing means the manual can pass a particularly rigorous test--it can work for the user. Similarly, because the Army, Navy and Air Force constitute one of the nation's largest post-secondary educators, they must design instructional texts and maintence manuals that will let enlisted men and women use and maintain the high technology equipment of aircraft, submarines and computers. Explaining new technology has become both a profession (for those who see themselves as technical "writers") and a part of one's professional work (for those who see themselves as "technologists"). If the vigorous job market for such professional writers and the popular opinion on the quality of current technical instructional writing is any indication, this is not a skill subject-matter experts

just naturally acquire.

g. Finally, to bring the demand for rhetorical problem-solving closer to home, we only need look at the budget justifications, long-term planning reports, and year-end statements our own deans and department heads make as college or university administrators, or at the yearly progress reports and the tenure and promotion statements we as faculty make. Like the trainees on their first job in the credit analysis office, we as professionals depend on writing to work for us, and we may put in considerable effort getting it to do so.

Designing Rhetorically Sophisticated Courses in Professional Writing

In this discussion so far we have looked at the debate over what we should teach, at research on the knowledge and cognitive processes of writers , and at some of the tasks they face. I would like to pull these three strands-- our teaching, the writer's knowledge and cognition, and the professional task--together to help answer the question: how might we design a cognitively sophisticated course in business and professional writing? How can we actively teach the knowledge (and thinking processes) our students will need for signigicant writing tasks? Let me suggest three guidelines in this enterprise and then look in more detail at what we might teach.

1. Recognize the different kinds of knowledge writers need.

Writers, I would suggest, need to operate with at least four levels of knowing. I choose the word "knowing" to suggest that a writer's knowledge goes beyond having statable "knowledge about" something. It includes procedural knowledge -- knowing "how to" manage one's own thinking process. We often talk of such knowing as a capacity (eg., to imagine a reader's response) or an ability (e.g., to plan) or as a higher-level skill (e.g., in testing and evaluating a text).

The first level is topic knowledge--a necessary but not sufficient condition for writing. The second level is discourse knowledge. One needs to know the conventions of writing in general and of the discourse-specific moves one can make in a given genre or kind of discourse. The third is rhetorical problem solving which involves a repertory of strategies for the task of writing itself--for exploring the rhetorical problem, for generating ideas, for adapting to the reader and for understanding and monitoring one's own writing process. The fourth level, which I will return to at the end of this paper, is metaknowledge-- knowing what you know. Because there are no simple rules for managing rhetorical problem solving, expert writers often depend on a meta-awareness of their own stategies and options. This knowledge is what lets writers rise above individual tasks , review their options, and consider out what they <u>might</u> do in the face of this new problem. It lets writers manage their own composing process.

Writers who work habitually with the first level of knowledge have little recourse when they encounter a new task or need to adapt their knowledge to a reader's need. Writers who work primarily at the level of discourse conventions may indeed have a good deal of knowledge about writing, but may use that knowlege only when the context says to--e.g., revising is a strategy one uses in English class. Writers who are able to move to rhetorical problem solving have learned to explore the task itself and to use knowlege about the topic, the genre, and about writing strategies to meet the goals they set. Finally, writers who can rise to meta-awareness of their knowledge and process not only expand their options in the face of any given problem; they are the writers who will learn the most from experience and from our classes.

2. Teach for the significant tasks

I don't want to overstate the case for rhetorical problem solving. There is no point in assuming that it is always necessary, any more than we should assume that a clear, explicit, plain prose style is always best--even though we value it and write textbooks on how to achieve

it . In fact, jargon and even vagueness, fustian, and indirection have their place in the real world. Part of the savvy that experience brings is knowing when not to say anything. Likewise, a fair amount of the writing people do is a everyday affair for which knowing the genre or having the right facts to relate offers a ready-made, quite accepatable plan.

On the other hand, we don't bother to teach padded, indirect prose–people seem to pick it up quite well by themselves. We teach those more difficult-to-learn skills that writers need for the more significant tasks. Rhetorical problem-solving calls for knowledge and skill . In using the word "skill," I want to emphasize that we are talking about intellectual skills--about acts of cognition that are typically carried out with some effort and developed through practice. Such knowledge can give a practical yet substantive, intellectual base to a college-level course . And unlike savvy, it is also teachable. It helps students learn to control their own process of writing when topic knowledge or prior schemas won't carry them through.

3 Teach from our special strength.

When we include rhetorical problem solving in our curriculum we are teaching from our greatest strength. As English teachers we are obviously experts in writing--not in accounting or engineering or in the inside dynamics of sales offices, or in the discourse moves of middle management negotiation. Moreover, if our goal is serious substantive teaching, we could never deal in depth with the conventions of all those discourse communities even if we knew them.

The positive side of this coin is even more important. There is a long tradition in rhetoric underlying the teaching of composition. This perspective on writing as both discovery and communication informs current research in the writing process as well. Our teaching can (and I believe should) be based on a substantive body of discipline-specific knowlege (Cf. Lauer et al. 1984; Flower, 1985; Young, Becker & Pike, 1970). This, in addition to our training in how language works and in being perceptive readers and interpreters of both expert and student texts, gives us us a body of knowledge about rhetorical choices and and a language for articulating those choices that is our distinctive disiplinary strength. Furthermore, if writing classes don't help students develop this combination of awareness and substantive knowledge about their own writing process , about the effects of language, and about dealing with rhetorical problems--if writing clases don't teach this, what other part of a university or on-the-job training will?

II. The Practice of Rhetorical Problem Solving

Knowing that our students will need to do rhetorical problem solving is one thing; teaching it another. Once again we find ourselves making decisions about what aspects of this process are most worth teaching. The following case study of a small company in Kansas City lets us follow the problem-solving path a group of writers took through a real rhetorical problem. It illustrates three key points along this path at which writers typically rise to rhetorical problem solving: 1) in exploring the rhetorical problem (especially at the outset); 2) in creating a plan; and 3) in reviewing and testing both plans and text. After looking at how these three problem-solving processes operated in their real-world context , I would like to look more closely at each as a cognitive or intellectual process and ask the question: what would the expert's path through this process look like? Would it differ from the path a less experienced writer or learner might take ?

1. Exploring A Rhetorical Problem

In business and professions problematic situations turn up with great regularity. However, people do not solve ***situations*** --they only solve that problem which they have

defined for themselves, within that situation. In the case we will follow, the rhetorical situation was complex, but what mattered was how the writers explored and defined the problem they would then attempt to solve.

Twentieth Century Investors is a small but well-established mutual fund company that makes its money by investing the accumulated capital of many smaller investors in the stock and bond market. Investors in mutual funds, who range from individuals with a nest egg to companies and institutions investing their entire pension plans get the price advantage of large purchases and the benefit of professional management to select and to buy and sell stock as needed. But investing is not predictable, and in early 1984 the economy had not been stable. The stock market had taken a series of dives and Twentieth Century's earnings had gone with it. Over the last six-month period their largest fund, called GROWTH, had declined in value by 13.9%. Nevertheless it was time for a Semiannual Report that is required by the Federal Securities Commission and mailed to all shareholders.

How might we represent the rhetorical problem this situation posed? Herbert Simon has described such situations as a *problem space*, using as an example, the problem of choosing a move in a chess game (1973). The theoretical problem space of any given problem contains all the goals and constraints one might consider, all the possible moves or actions one could take at that point, and all possible solutions or outcomes one could achieve.

The problem space of most rhetorical problems is very large indeed. However, the space (i.e., the information) which counts is that which writers represent to themselves. Novices it appears, often cut the exploration process short and in doing so define smaller problems than do experts. The task they give themselves is more manageable, but it may overlook possible solutions and it may ignore some crucial constraints. For example, we could imagine a problem space for the Twentieth Century Semiannual Report problem that contained little more than the assignment as in Figure 1.

INSERT FIGURE 1 HERE

The assignment here, like those for school tasks, offers only a skimpy version of the problem. Writing, especially significant writing, goes on in a social context in which writers have goals and readers have certain needs and possible responses. One of the key actors in this rhetorical situation was the shareholder. During this period of economic instability, shareholders were especially likely to be concerned about earnings, to read the report, and to use it to make decisions about future investments. Twentieth Century had, in fact, recently introduced two new funds to which it wanted to attract investors. But because they had been introduced in November, at the beginning of the current decline, their current record was a -14.2% and -20.4% loss in value. The goals and expectations of the primary actors in this rhetorical sitution did not appear to be in synch.

This rhetorical problem had another dimension. People who read investment reports belong to a discourse community that expects certain things. Nevertheless there are some important differences within that community. Some readers will be accountants with institutions who invested in the fund--people trained to read figures, analyze financial statements, and evaluate the long-term success of a Fund. Others will be small investors who read the synopsis at the front of the report and look for the bottom line--the percent of growth or loss over the current period. This was an important part of the problem because Twentieth Century estimated that nearly 50% of their clients were small shareholders, with investments of under $25,000. And these shareholders had been indicating that they wanted more communication from the company. However, Twentieth Century was a small company and a "no load" fund. This meant that it didn't charge the 8% fee on all puchases that the "load" funds did; it didn't maintain a large sales staff, and it didn't even have a public relations office. A big ad campaign to offset weak returns was not the way it did business.

When it came time to write the Semiannual Report, these goals, constraints, and features of the readers were all part of the rhetorical problem as James Stowers, President of the

company, and his investment team saw it. They had already given themselves a rich problem that went well beyond a formal task--write a financial report--and beyond the apparent content they had to report. However, it was when one additional dimension was added to this problem space that the whole nature of the writing task changed.

Most people might have defined the rhetorical problem as how to deal with an awkward failure. Stowers and the investment team defined it, surprisingly, as how to deal with success. For twenty-seven years Twentieth Century had been a small no load fund chugging along with little or no marketing and low visibiliy, but a solid, steady performance. As they put it, Kansas City is not the center of the fund industry. Moreover, it was strongly committed to a investment policy geared to long-term returns--to keeping their assets fully invested and not trying to predict the short term dips and jumps of the market. Then suddenly in the last five years this little company in Kansas City had blossomed into a highly competitive Fund. It was on the front page of Money magazine and celebrated in in Forbes and Fortune. As a result many new investors,who had just become aware of mutual funds, had joined when the market was at a peak. They had become used to a steady diet of good news and returns.

But many did not understand how the market operates--they expected the fireworks to last. So the problem as Stowers saw it was, how do you deal with explosive growth and success? How do you deal with a fundamental conflict between the expectations of some of your investors and the realities of investing , especially given your philosophy of picking investments for their long-term potential rather than their prospects for the next six months ? The problem as they saw it involved fundamental conflicts between the company's and (some of) the readers' perceptions. This conflict, like the results they had to report and the federal regulations constraining how they did it, was a part of the report writers' task--a part of the goals and constraints they had to work with.

INSERT FIGURE 2 HERE

The problem space, outlined in Figure 2 is of course only a partial record of the information, goals, and constraints these writers actually considered. But even this sketch makes one point clear--this rhetorical problem is a ***construction***. A sense of the problem based merely on genre knowledge or content knowledge would never have produced this picture of the writer's task. In "considering their audience" for instance, these writers did not merely survey the obvious. For good or ill, they selected or imagined certain features of those readers that came into conflict with their own goals. Rhetorical problems like this one are made, not found. (We will return to their solution later.)

The Expert's Path in Exploring Rhetorical Problems

Once described, the problem sketched above may seem commonplace enough. The problem definition doesn't depend on expert topic or discourse knowledge. The expertise it illustrates lies in the act of going beyond the assignment to explore and construct a specifically rhetorical problem. Yet it appears that this process is one inexperienced writers often fail to do and which we may need to teach . The reasons for this neglect are easy to see. In school writing the social, rhetorical context is often buried and the student is used to dealing with assignments, not problems. When the writer enters a new discourse community (whether it is our class or a job in banking) the writing strategies learned in school may persist. Many times the savvy and sophistication people develop in personal relations on the job fail to transfer to the task of writing. When the writers sits down to compose his or her old assignment-driven strategies for producing text leave no room in the writing process for rhetorical problem solving. Moreover, as researchers such as Lee Odell (in press), Jack Selzer (in this volume) and Caroline Miller (1985) are showing us, this process is a substantial cognitive act that calls for inferences, hypotheses and critical thinking. Constructing a rhetorical problem, like any high-level cognitive act, calls for a bit of work. Our textbooks, on the other hand, tend to suggest that general awareness of the reader and a spot of empathy will see you though.

What might an expert path through problem exploration look like? Complex processes don't have simple rules, and we have a lot to learn about how people manage such cognition. However, some provocative insights into how this process works come from studies of the paths experts take in different domains.

For example, Voss and his colleagues (1983) asked a number of social scientists, students, and chemists to place themselves in the following administrative position: "You are the new Soviet Minister of Agriculture. Agricultural production has been low for the past five years; how would you improve it?" The striking feature of the experts' process was the large proportion of time and attention devoted to developing a representation of the problem. Unlike the novices who isolated a few possible causes and then began to list solutions, the experts searched out constraints in the problem, such as Soviet ideology, the outcome of past efforts, the effects of climate, and the amount of arable land. Moreover, in considering possible solutions the experts continued to dig out the hidden constraints in the problem (e.g., you could increase fertilizer production, but there is only one railroad across Siberia to transport such goods to the farmers). This elaborated representation also helped the experts to classify the problem in a general way (as primarily technological, political, social, etc.--although different experts made different decisions) and to consider solutions in light of this more abstract orientation.

Although topic knowledge was very important in this process, Voss et al. found that students who worked on this problem at both the beginning and at the end of a course in Soviet economic policy did no better at the end. They had learned new information, it appeared, but not how to use that information; they had not learned the cognitive process of exploring a problem like an expert.

In my own research with John R. Hayes, we found that experienced writers generated far more plans and goals during the writing process (in prep.). As they compose, writers construct what we have called a Working Goal Network which includes goals, subgoals, criteria, and tests. Although sheer number of such elements is not the whole issue, in the space of an hour's work one of the experts generated 103 elements to a novice's 19. Although they wrote comparable amounts of text, they were responding to radically different, self-constructed problem spaces.

Another important part of invention and exploration is the search for relevant information outside one's own mind. For on-the-job writers this may also mean going outside one's own area of expertise and locating information. In a study of the search procedures people used on a new library computer catalog, Sullivan uncovered interesting differences in the search strategies of expert and novice searchers (1985). By analyzing the thinking-aloud protocols of people planning a computer search Sullivan was able to track their mental search paths, goals and decisions..

When asked to discover as many references as they could on the topic of "erotic art," the student searchers, like the novices in the Voss et.al and Flower and Hayes studies, ended up with an impoverished set of possibilities. They seemed to rely on trial and error and often chose the first plan that presented itself. The experts, like Voss's experts, ran mental simulations of plans they considered, imagining the outcomes of different approaches.

The experts, however, did not employ a single strategy: there is no algorithm for a good search on difficult problems.. Sullivan found some experts who worked as Explorers. They started by building an imaginary pool of probe terms that would give them a large number of what librarians call "hits" or potential references (e.g. they would consider "ero" because it might pull in the French references to erotisme). They would then mentally wander around in this accumulated information looking for likely search paths. Other experts worked as Definers. They put a great deal of initial effort into thinking about the question and defining the best possible first term to use. They tried to narrow the search down as quickly as possible, to find an angle or a well-specified probe that would give them the references they wanted, but exclude all others (e.g., they would quickly eliminate the term "art" as a probe).

Both kinds of experts, however, showed the flexibility to change methods when difficult searches demanded it--that is, when they they encountered a problem or thought of a new

subgoal, they would switch to a strategy that might work.

These studies are only a beginning, but they point to some features of an expert exploration:

1. The methods of exploration experts use are adapted to the task at hand or to the a given discourse. Librarians, social scientists, and writers use strategies tailor-made for their tasks. We would predict that a student who was good at exploring a problem in economics or accounting would not necessarily have learned how to explore the rhetorical problem of supporting an economic analysis or explaining an accounting decision.

2. In addition, experts themselves may vary in the methods they use to explore a complex problem. For significant tasks there is no simple formula, uniquely best method, or single "expert" process.

3. However, the expert paths we see across these tasks have a lot in common. The experts conduct a broader exploration of their problem, they look at more facets of the task, they set goals, and they test their exploration against their goals. Exploring a rhetorical problem appears to be a process that calls for some clearly definable expert strategies.

2. Creating a Plan

The investment team at Twentieth Century clearly succeeded in constructing a rich problem definition, one that recognized a wide array of important goals and constraints. However, having created a sophisticated representation of their problem, it is unlikely that a plan based merely on genre knowledge or on format schemas would solve the problem any more than a plan based on presenting their topic knowledge would. Rhetorical problems call for intelligent rhetorical planning. The process of creating a plan is the second point at which writers often rise to rhetorical problem solving.

The decisions the Twentieth Century staff made illustrate two steps in such planning: the first is creating a high-level plan and the second is generating ways to instantiate that plan in text. In planning their report the staff had a number of standard options: ignore the problem and it will go away (as in fact they were confident it would), resort to generalities about the economy and the market in general, or simply take a positive posture in negative times by celebrating past performance ("Fourteen years ago we....") or by shifting the focus from performance altogether to other features of the Fund, such as new services or new products. The top-level plan they choose was somewhat more radical. They decided to face the situation directly and use it as an occasion to explain their investment philosophy, that is, the policy of investing for long-term capital gains and riding out these dips in the market. They decided, in effect, to educate their shareholders--to convince their readers to take the long view , to see this dip as part of the big picture, and even consider increasing their investments now when stock prices were low.

Creating a top-level plan that is sensitive to the larger problem is a critical first step. Without it, no amount of correct, careful, or well styled prose will succeed at solving the rhetorical problem. On the other hand, it is not always clear how to carry out such plans, even if they offer potentially brilliant solutions. Creating a plan also means creating a way to ***instantiate*** those global intentions. Instantiation is the process of generating a specific instance of a more global or abstract plan. For example, if we have a computer program that will format a bibliography, we instantiate this abstract set of instructions by typing in the specific authors, book titles, and publication data that allow the program to run. Global plans (or instructions) such as "educate the reader," allow so many possible instantiations that however clever the plan , the writer's work has only begun. The writer must try to generate an instance of "educating the reader" that meets all the goals and criteria set up in his or her representation of the problem. (A more extended discussion of instantiation appears in "Images, Plans, and Prose: The Representation of Meaning in Writing," Flower and Hayes,1984.)

INSERT FIGURE 3 HERE

In the excerpt from the final report in Figure 3 you can see how the staff at Twentieth Century choose to instantiate this plan Their text plan revolved around a metaphor that the President, James Stowers, had used for years to explain his philosophy: when you invest for the long term, look for the tennis balls that bounce back when the market recovers--and avoid the chicken eggs. The second feature of the plan at this level was to create a new two-color graph, called a "mountain investment chart," which could graphically show the long-term success of the company's funds and make the quarterly results easier to understand. Finally, those plans had to be instantiated at yet another level with specific content and organization, and eventually with actual words and designs. Writing this report was a collaborative affair which involved not only top management--Stowers and the investment team--but portfolio managers and an advertising company which contributed the visual instantiation of Stowers' metaphor. The process of instantiating plans then went on at many levels and involved a number of people trying to carry out a coherent, collaborative plan.

Creating a Plan--The Expert Path

What would an expert path through this planning process entail? In the Voss et al. study we saw that novices leaped from exploration into solution making with great speed . Likewise, studies of novice writers frequently note the speed with which novices leap into producing text with little to no planning. However, the time spent in pre-writing (or even in planning over the whole process) is not a reliable indicator of expertise. What matters is how writers use that time. Consider these differences:

(a.) In a study which compared the writing process of college students with their instructors, John R. Hayes and I found the students spent their time constructing what we might call plans To Say (1980; in prep.) That is, they were searching for and organizing content material, things one could say in a text. Of the new ideas they generated in a one hour period, 70% were statements of content information that could go directly into the paper. The experienced writers, by contrast, were putting their effort into developing plans To Do something through writing. That is, they were spending time in rhetorical planning, considering their goals, their audience, and the possible implications of various choices. Their performance was almost a complete reversal of the novices': only 31 % of the experts' new ideas were devoted to simple content plans for what To Say, and 69% of their new ideas involved a rhetorical consideration of goals, audience, or form.

(b.) Another difference stands out in the focus and organization of expert and novice texts. Novice writers, as described above, often end up with "writer-based" prose organized, like a memory dump of a computer file, according to the way the writer stored or retrieved his or her information. The narrative or simple descriptive structure of writer-based prose reflects the structure of the writer's knowledge and offers a highly efficient strategy for retrieving information and generating ideas. Unfortunately, such a structure is often ineffective for the reader who, in business and professional writing, often expects a hierarchically structured discussion focused on an issue or a problem. Moreover, readers don't expect the text to be focused on just any problem, but on one in which they share an interest.

We could, for example, imagine a writer-based plan To Say for the Twentieth Century report which might look like this:

A Plan To Say

- In reporting the losses for the current period we were concerned that shareholders might misinterpret the results.
- We do not see the current loss picture as a cause for concern.
- Long Term investments ride out the fluctuations of the market.

- The Market operates in this way:
  Point 1
  Point 2 [and so on]

I have no evidence that the investment staff considered this plan; however, it is typical of many plans I have seen my students in business and professional writing make. In some ways it is quite straightforward, but its egocentric focus on the the writers' worries and its combination of a narrative structure followed by a textbook recitation makes it visibly insensitive to the rhetorical situation and to the legimitate concerns of the readers.

By contrast , my interviews and the text of the Twentieth Century report let us piece together a quite different plan for the real text (information in italics comes from the introductory paragraph). The interesting feature of this plan is how the writers translated their rhetorical goals into a clear, issue-centered text structure . Notice how the major headings for the report also reflect questions the critical reader is likely to have.

A Plan To Do

- We need to deal directly with shareholders' expectations for continued growth or short-term returns
  - Use this loss as an occasion for explaining our philosophy of long-term investment planning.
    - Use the egg and tennis ball metaphor to show how our policy deals with market fluctuation
- *Recognize that the reader is concerned with results and present the report in terms of how those results are achieved.*
  Point 1. How We Choose Stocks
  Point 2. Characteristics of Twentieth Century funds [and so on]

How do experts go about instantiating these more global, To Do plans in the form of actual words and sentences? Creating reader-based prose requires thought and planning at the text level too. For example, when we studied differences between well and poorly written government regulations, we found that effective texts relied on a Scenario Principle that organized ideas around the perspective of the reader (Flower, Hayes, and Swarts 1983). Poorly written texts were focused on formal defintions of key terms and concepts--concepts which would be familiar to agency writers but not readers. By contrast,the more readable, revised regulations created Scenarios organized around human agents acting in some context. Instead of defining the features of "eligibility"--a concept the agency writers would be familiar with--these scenarios depicted eligibility in terms of people who did certain things in specified situations. (E.g., if you want to sell an illegal or untaxed item such as moonshine, you aren't eligible for a federal Small Business Loan.)

Making and instantiating rhetorical plans also goes on at the sentence level. When writers try to move from a rhetorical plan to text production, Witte has shown that a crucial link in this process is the writer's ability to manage the topical structure of sentences and paragraphs. For example, in a recent study Witte follows the planning processes of two students struggling to write an argument for or against a student grade appeal (in press). The unsuccessful writer in this study concentrates on "figuring out" her position on the case (she concludes Jack is innocent). She then tries to write <u>about</u> her observations, never seeing that such observations should work as "evidence" within the frame of an argument. Her text is neither coherent nor persuasive, and the writer appears to find the process of ordering her thoughts and sentences a frustrating one.

The successful writer handles the transition from content information to text differently. She starts by forming a rhetorical plan and a sense of purpose (vis-a-vis the faculty Board she is addressing). She then places her observations (she too thinks Jack is innocent) within the

conceptual "frame" of an argument, organized around a top-level proposition which requires evidence. She then uses this discourse frame and its top-level proposition (the discourse topic of the essay) to dictate the topical focus of units of the essay and of individual sentences. As a result, her text not only seems locally coherent, it is also coherent with a larger rhetorical plan.

Witte's study shows us how the path from plan to text can be a series of rhetorical decisions in which the the writer's plan and purpose are instantiated in the choice of a top-level discourse topic which is in its turn elaborated by a series of related sentence topics. The writer's purpose is realized in choices at every point the hierarchy..

These selected studies can only suggest some of the features of expert planning, but taken together they illustrate three key points:

1. Important parts of the planning process are conducted at the level of sentence production and text organization. Planning at the text level may call upon writers to reorganize information or to create a topical focus that reflects a more abstract purpose.

2. Creating reader-based prose also calls for planning at other levels. Expert planning can be a demanding cognitive process (even for "experts"). Having given themselves a richly complex problem, and having represented the readers' needs as part of that problem, writers must often reorganize their own knowledge, forge new idea structures, generate new concepts, and infer new relations in order to develop an effective plan for their text.

3. Rhetorical problem-solving and planning, like any demanding cognitive process takes time , energy, and experience, in part because experts are planning at so many levels. Getting a good top-level plan is a crucial beginning, but expert writers continue to plan and test as they consider various ways to instantiate those grand schemes. This image of planning as a sustained self-conscious activity, focused on building a reader-based plan To Do something through writing, may be news to our students, who see business and professional writing as working a formula or generating content.

3. Reviewing and Testing

Academic writing often "succeeds" if it passes evaluation by a professor or peer group and meets certain discourse conventions for reasoning, evidence, truth, relevance and so on. The criteria are established, standard ones (though even these are not always obvious to learners). Business and professional writing introduces an additional criterion that is sometimes harder to meet: the text must work for its intended readers. Did the Twentieth Century report work? The authors were satisfied with the message, the writing was polished, and the final product well designed, but would it do what it was supposed to? Would it educate and maintain the investors' confidence? Would it convince them to invest more? In other words, did it meet its rhetorical goals? Tests for such effectiveness are not always easy tests to conduct, but in the long run they are the tests that matter.

Many business and professional texts also work as reference or informational documents. How effective are the new graphs? They look attractive and they appear informative. But a more practical test might be, what happens when new investors try to read them: how long does it take to find data one wants; do readers comprehend the tables to the right of the graph correctly; do they read them in such a way that they see the long-term trend; could they answer comprehension questions on the graph? In some areas, such as instruction manual writing, writers actually conduct field tests. But those are often expensive and too time-consuming to do once the work is fully completed. The writer's problem is often how do you conduct reader-based tests in the process of writing; how do you review and evaluate your own work from a reader's point of view?

Reviewing and Testing: The Expert's Path

To begin with we must face the fact that even good editors have difficulty testing from the

reader's point of view. In a recent study, which compared four different ways to test functional documents, Dieli used a computer manual with known user problems to see how many problems her different methods of testing would detect (in prep). The four methods were: 1) a computer program style checker called Murky , 2) a group of experienced writer/editors, and two new methods of testing based on 3) think-aloud reading protocols of potential users reading the manual and 4) think-aloud user protocols of users trying to actually follow the instructions to do a task on the computer. In these protocols readers and users think aloud while they carry out the task (they are not asked to interpret or *talk about* their their response but to attend to the task and merely think aloud) .The protocols provide a detailed record of readers' efforts to comprehend a text and users' attempts to carry out the instructions and use them to recover from the inevitable errors. (Cf.Atlas 1981; Dieli, in press; Sullivan, in press.)

In an earlier study , which tested insurance forms and warranties, Swaney et al. 1981) found that experienced editors were able to detect and revise many problems (especially those connected to langauge and style). However, when the revised texts were submitted to protocol-aided evaluation, they still presented some major comprehension problems for readers . Moreover, some of the editors' revisions actually lowered readers' comprehension and performance on a short test. The Dieli study also found that think-aloud protocols of users detected many problems the editors missed. It went on to make a detailed comparison of the problems each group uncovered and found that editors using standard methods, such as check lists, often missed crucial problems, such as users' difficulty getting access to information. For example, in using the table of contents, index, or headings of one manual, a reader who wanted to set up or alter a list of figures had to already know the subtle differences between the commands of Paste, Paste Value, and Paste Adjust to even gain access to the manual's instructions. Many users simply never found the information they needed.

However, Dieli found that the editors' ability to detect real user problems improved when she altered their evaluation process by training them to focus on user needs and the readers' process rather than on standard text features. For example, users often have difficulty interpreting the meaning of symbolic information (such as boxes, arrows, color, and special characters). Editors were prompted to note symoblic information as a source of potential problems and decide whether its intended information would actually be understood by a new user. Editors prompted to focus on the user's needs attempted to simulate a reader's response and generated far more information about user problems than other editors .

Functional writing achieves its goals when it works for the reader. This means that in order to review and test their writing, business and professinal writers must often go beyond the standards for well-formed text and ask: will this text work for my reader (or even for multiple readers)? Testing the text means not only anticipating the reader's expectations (e.g., for a reader-based hierarchical structure) but predicting where the reader might have difficulty. Defined this way, testing the text means simulating the reader's comprehension process. It is not entirely clear how experienced writers carry out this sort of testing but, we can point to some features of the expert review process that stand out as clear and teachable processes.

1. Experts go beyond the surface features. It is well known that student writers stick to evaluating the the rule-governed and surface features of a text. Ironically, many guidelines for business writers simply extend those criteria to include report format and "plain" style, but go no deeper than the surface language. Yet in the highly rhetorical context of business, correct and stylistically "well-written" text is often not enough.

2. Experts review their text at the level of its gist or the gist of sections and at the level of its goals. Witte has suggested that the topic shifts and confused topical structure of student revisions reflect the students' piecemeal understanding of the text (1983). The

students never came to grips with the gist of the text before revising. When business students are explicitly prompted to revise their own disorganized drafts, we have found that they often have trouble extracting the gist (Garay 1984). The expert path seems to involve first constructing a gist or articulating one's goals and then using these constructions to test the text. This is not to say that the process is simple or straightforward. The expert writers we studied often went into extended (e.g., 3-4 minute) problem-solving episodes, considering alternate goals for a text and setting up a series of gist statements in order to diagnose and solve a problem (Flower, Carey and Hayes, in prep.)

3. Finally, experts take one more step beyond the text itself and try to simulate a reader's response. In a study of the revision process involving students, professional writers and writing instructors, we found the the professionals treated the revision task we gave them as a straightforward genre problem whenever they could (Hayes, et al. in press). (They were asked to revise a text to be used as handout for freshmen.) However, when genre knowledge didn't specify what to do with a problematic piece of the text, the experienced writers all turned to diagnosis--they tried to define the problem in terms of its rhetorical effects. Furthermore,this diagnosis sometimes took considerable time and effort as the reviser tried to simulate a reader's possible response and then use that simulation to pinpoint the problem.

This observation, in a way , captures the gist of my argument for this paper. When possible, business and professional writers rely on the most streamlined knowledge they possess. If genre or topic knowlege can produce a good plan or a good diagnosis, that is what writers use first. However, the special prerogative of experienced (and effective) writers is their ability to rise to rhetorical problem-solving when the occassion demands. My sense as a writer and teacher of writers is that such occasions are not the exception but reflect the rule in business as usual.

The Transfer Dilemma: Realistic Tasks versus Underlying Processes

If the picture of business writing and rhetorical problem solving I have painted is accurate, it has a number of implications for teaching. One is that if we want to prepare students for writing beyond the classroom, we must help them to do more than master conventions, correctness, and a "plain style." To develop their skills of rhetorical problem solving they need to work on realistic tasks, not toy problems. I remember vividly giving one of my first professional writng classes a memo assignment I had cooked up on a toy marketing problem, and being impressed at the flashy, sophisticated writing they produced. Then a week later I saw a similar memo they were writing for an economics class in which they had a great deal of real information to discuss and integrate. Their apparent writing skills fell apart--they could not <u>control</u> the knowledge of rhetorical conventions they did have; they could not bring it to bear on hard tasks that required more than spinning out a verbal formula. We see this same phenomenen in the development of children's abilities: the child can do marvelous things with the support of the teacher or on familiar, engaging topics, but can not transfer "what worked once" to a new task or to independent work. Writers need to learn on realistically complex problems.

Yet the aspiration to teach to a realistic task (rather than review more general conventions) creates a dilemma. We simply can't teach the range of situations that turn up in business and professions. Therefore our students must somehow generalize our teaching and transfer it to new tasks when we aren't around. Nor is it enough to say that <u>we</u> (as teachers and specialists in the field) know there is an underlying principle and could see its application . The student must be able and ready to transfer his or her knowledge in new situations.

The history of education offers us some notable failures in hoped for transfer. Learning math, for instance, doesn't finally appear to increase a student's ability to think logically about the modern novel. And mastering the short essay on literature in one's freshman compostion class fails to transfer not only to business but to much other academic writing. There are many reasons this happens. One is that transfer <u>across domains,</u> such as math and reading, is a

difficult and rare event. Moreover when writing is taught in terms of its specific discourse conventions, rather than in terms of goals and strategies, the knowledge a student learns doesn't appear (to the student) to apply in new genres. The new genre doesn't provide the cues that call up what the writer does, in fact, know. Although strategies for planning an introduction may transfer in theory, they won't transfer in practice unless the student sees the connection between tasks.

I think it is possible to approach this dilemma in two ways:

1. Teach rhetorical strategies--both general ones and those which underly the conventions of different kinds of discourse.

Understanding one's own writing process is one kind of rhetorical knowledge that has immense transfer arcoss rhetorical tasks. Knowing how to go about exploring a problem, creating and instantiating a plan, and testing and revising a text is a form of rhetorical process knowledge. It may not transfer to math, but it works across many writing tasks. Rhetorical problem-solving is itself a specialized kind of knowledge students may learn nowhere else. Although students do strategic thinking in many areas of their lives, they have often not learned to think strategically about their writing and may come to a business writing course expecting to master writing with fast and easy formulas.

It is also helpful to see that many discourse contentions are, in fact, formalizations of rhetorical moves. For example, academic articles typically open with a review of the literature and a statement of a problem for rhetorical reasons: the author needs to show the necessity for the article and to establish his or her own credibility. Seeing conventions not as rules but as means to an end, opens the door to discovering other, often more appropriate ways to achieve the same end.

2. Help students develop a meta-awareness of their own strategic processes.

Developing the repertory of strategies mentioned above will be a giant step for some writers. But the expert writer is also knowledgeable about his or her own knowledge. The real hope for transfer--for helping a student to become more self-sufficient as a rhetorical problem solver--lies in the student's own awareness of what he or she can do. All of us have tacit strategic knowledge for writing of which we are scarcely aware and can't describe. But in those areas where we possess meta-knowledge--when, for instance, we become aware of some of the alternative planning strategies we control--we have a new power. Unlike the plight of writers who must have a familiar or highly motivating topic in order to write well, writers with increased meta-knowledge have the power to call upon and control the rhetorical knowledge they do have when they need it.

Business and professional writing calls for professional level rhetorical problem-solving. As with any important act of cognition, when writers know the real dimensions of the task and the knowledge it calls for, they are more likely to manage their own writing and thinking with the same awareness they bring to other aspects of their professional life.

Figure 1. A Problem Space Defined by the Assignment

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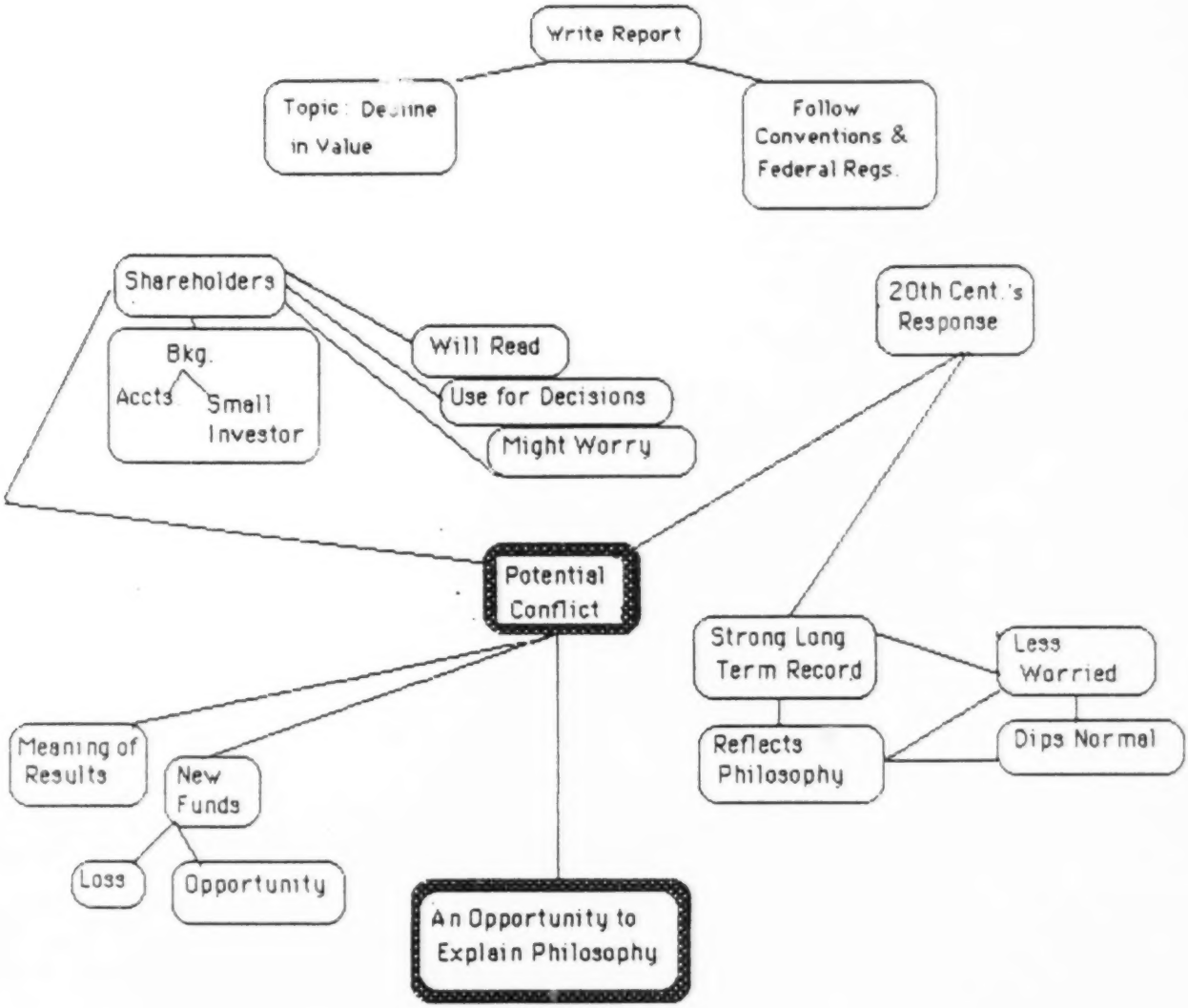

Figure 2. A Problem Space Constructed by Exploring the Rhetorical Problem

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Figure 3a. The Twentieth Century Report: The Text

AN OVERVIEW

While you as a shareholder of Twentieth Century are concerned first of all with the actual results achieved on your behalf, you may also be interested with how those results are achieved. The following comments address four key aspects of the investment policies we pursue on behalf of Twentieth Century.

1. How we choose stocks
2. Characteristics of the Twentieth Century funds
3. How timing affects your investment results
4. The importance of investing for the long-term

How we choose stocks

Twentieth Century is guided by the conviction that *companies demonstrating an acceleration of earnings and revenue growth are likely to appreciate in market value.* Each day our investment team searches for publicly-traded companies with this accelerating growth, using extensive computer hardware and software designed especially for us. Companies that are accelerating are candidates for purchase. Companies that are not accelerating are avoided, or sold if already owned. This process of *active management* allows us to continuously monitor and update the portfolios of Twentieth Century to reflect the latest information available about the companies meeting our criteria.

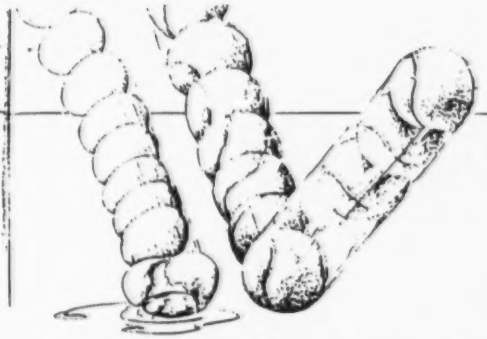
Another important element of our investment policy is a *commitment to staying fully invested*—a policy that has worked well for us in the past. We do not speculate as to which direction the market is going since we don't know anyone who has consistently outguessed its sporadic moves. While our policy of staying fully invested can produce short-term disappointments, Twentieth Century's record suggests this approach is really more of an opportunity than a risk for serious, long-term shareholders.

Characteristics of the Twentieth Century funds

Perhaps one of the first things you'll notice about your investment in Twentieth Century Investors is that *share prices change almost daily.* The funds do not have a constant value. This is because the common stocks we purchase for the funds represent ownership interests in various companies. As the progress of these companies ebbs and flows, so does the value of the funds' ownership in them. In addition, common stocks as a class of investments are influenced by the relative attractiveness of other investments such as bonds, certificates of deposit, and money market funds.

Shares of Twentieth Century Investors can fall as well as rise in price. Your investment is not immune to corrections in the stock market or disappointments in the companies selected for investment. However, our stock selection policies are designed to help contend with the uncontrollable meanderings of the stock market.

In simple terms, we believe some stocks are like tennis balls, and others are like chicken eggs. A falling market takes them both down. But when the market



bottoms, tennis balls bounce back. So our goal is simple: find the tennis balls, and avoid the chicken eggs. As a result, Twentieth Century's funds have had the *ability to bounce back strongly in price when the stock market recovers.*

Another characteristic of the Twentieth Century common stock funds is that most of the return they provide is in the form of *capital appreciation*—that is, a higher share price. Their production of *dividend income is relatively low.* The only consistent income provider of our common stock funds is Select Investors. Shareholders who want substantial current income are advised to consider Twentieth Century's U.S. Governments, a bond fund invested in government issues.

How timing affects your investment results

You may be surprised to learn that the single most important factor in your early success with Twentieth Century Investors is the date on which you make your original investment. For example, if you began at a time when the stock market was depressed you probably have had relatively good early investment experience and are quite happy. On the other hand, if you began at a time when the market was peaking, you may be disappointed by your early lack of progress.

The effect of the starting date on your investment results can be overcome by time and effective portfolio management. For example, suppose you had invested $10,000 in Select Investors on Sept. 13, 1978. Early results would have been disappointing because Select and the stock market declined in price shortly after the purchase. The original investment would have declined in value by 14% in eight months.

Thereafter, however, Select staged a strong recovery. Within another eight months, your holding would have bounced back (remember those tennis balls) to a value of $12,900 and by April 30, 1984, to a value of $29,400—almost three times the original investment. Had you redeemed your shares after the initial setback, you would have lost money and would not have had the opportunity to participate in the subsequent growth.

Because of this timing effect, we make the following suggestions:

1. Consider spreading out your investment over time in order to minimize the possibility of making an investment at a market peak.
2. Recognize that the value of your shares will fluctuate up and down.
3. Take advantage of lower prices—buy more shares and average down your cost.
4. Be prepared to give your investment the time necessary to prove its worth.

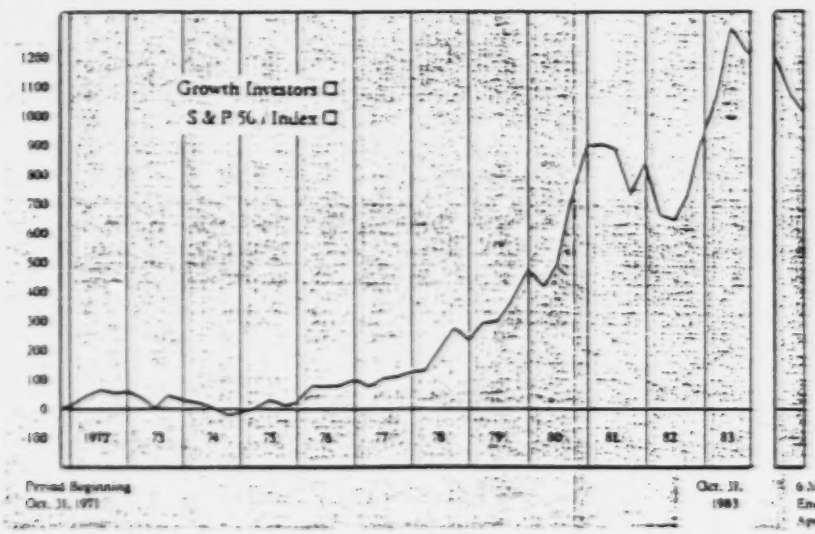
The importance of investing for the long-term

Twentieth Century recently celebrated its 25th birthday. One of our more important discoveries over the years is the fact that common stock investing is not a short-term proposition. The pursuit of investment excellence requires lots of patience and time—three to five years or more. Shorter periods are chancy because too many events can happen that are beyond the control of investment managers—oil embargos, wars, credit crunches, etc.

The symbol of Twentieth Century Investors is an oak tree, signifying growth, strength and durability. We think the development of a successful long-term investment record is similar to the growth cycle of the oak—neither happens overnight. Yet, with proper care, pruning (as needed) and patience the potential of both the acorn and the well-selected investment can be realized. There are no substitutes for careful management and time.

The performance of the Fund for various periods is compared with the performance of the Standard & Poor's 500 Index (S & P 500), which is a group of unmanaged common stocks, widely regarded by investors as representative of the performance of the stock market in general. The Fund and S & P 500 results assume the reinvestment of all distributions from investment income and security profits on the dates of distribution. The comparisons should be considered in light of the Fund's investment policy and objectives, the characteristics and quality of its portfolio securities and the periods selected.

GROWTH Investors



Total Investment Return

	Period Ending April 30, 1984		
	6 mos.	5 yrs.	12½ yrs.*
% Change For Period			
Growth	-13.90%	177.95%	1,041.94%
S & P 500	0.04%	103.07%	197.15%
Annual Compound Rate			
Growth	-29.73%	22.67%	21.50%
S & P 500	0.08%	15.22%	9.10%

[The orignial figure is a two-color chart: the company's growth forms a blue-green mountain superimposed on a grey background. A white line along the bottom shows the growth rate for Standard & Poor's 500 Index.]

Figure 3b. The Twentieth Century Report: The Graphics

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